REMARKS

Claims 1-20 were examined in the Final Office Action mailed September 20, 2006. Claims 1-12 are allowed. Claims 13 and 14 stand rejected as anticipated by allegedly admitted prior art *(APA)*. Claims 15-20 stand rejected because the claimed invention is directed to non-statutory subject matter.

Further consideration is respectfully requested in view of the above amendments and the clarifying remarks below.

A.   § 102 Rejection of Claims 13 and 14 over "Admitted Prior Art" is Addressed.

The rejection of claims 13 and 14 as being anticipated by "admitted prior art" *(APA)* described in the specification at page 4, lines 7-10 is respectfully traversed.

The text of the paragraph at page 4, lines 9-11, which follows the formula pointed to in the Office Action, clarifies what is a misperception about what is admitted to be conventional about the coding method of the present invention and what is not admitted to be conventional:

- What is conventional are the existence of two conventional binary codes, one being (n/2) and the other being (n-1)/2.
- What is not conventional is the alternative use of the two conventional binary codes in a single coding method of the present invention.

This is clarified at lines 9-11 which follow the formulas pointed to in the Office Action. Lines 9-11 describe as conventional only either the "conventional binary code of n/2" or the "conventional binary code of the one's complement of (n-1)/2". The use of both conventional codes in a single coding method, selecting one or the other depending on whether n is even or odd is not conventional. See also lines 15-16 which points out that with conventional binary coding in the case of a four-bit counter, the maximal number is encoded to 1000. This statement is only meaningful if one understands that it applies to use of a single binary code, not the use of alternative conventional binary codes in a single coding method, as in the claimed invention.

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Thus, it can be seen that an aspect of the present invention is the use of multiple old element in a new coding method. Of course, an invention is patentable, even if it employs "old elements". This issue has often been addressed by the courts and innumerable cases upholding the patentability of inventions using "old elements" are available. One such case is *In re Rouffet*, 149 F. 3d 1350, 1357 (Fed. Cir. 1998), which stated that:

> .... "virtually all [inventions] are combinations of old elements." *Environmental Designs, Ltd. v. Union Oil Co.*, 713 F.2d 693, 698, 218 U.S.P.Q. 865, 870 (Fed.Cir.1983); see also *Richdel, Inc. v. Sunspool Corp.*, 714 F.2d 1573, 1579-80, 219 U.S.P.Q. 8, 12 (Fed.Cir.1983) ("Most, if not all, inventions are combinations and mostly of old elements."). Therefore an examiner may often find every element of a claimed invention in the prior art. If identification of each claimed element in the prior art were sufficient to negate patentability, very few patents would ever issue. . . . (emphasis added).

In the present invention, a conventional binary code is used as only part of a novel encoding method, as claimed. It is clear from a fair reading of the whole specification section referred to in the Office Action, that conventional binary codes are employed, but under certain conditions realized by the inventors. Furthermore, two different types of conventional binary codes are selected in each of the conditions according to the present invention. It would be clear to a person of ordinary skill in the art that the present claimed encoding method is not merely employing a conventional binary code, but rather employing two different conventional binary codes, and employing each one under specific conditions.

The present claimed encoding method, when considered in total as claimed, is not part of the prior art but rather a novel encoding method that has particularly applicability to and performance advantages when used with ferroelectric memories. For the reasons given above, withdrawal of the rejection of claims 13 and 14 is deemed to be proper and respectfully requested.

B.   § 101 Rejection of Claims 15-20 is Addressed.

The § 101 rejection of claims 15-20 as directed to non-statutory subject matter has two parts in which claims 15-20 are rejected as (a) merely

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manipulating an abstract idea; and (b) incorporating apparatus and method elements in the same claim. These rejections are respectfully traversed.

The rejection of the claims as combining apparatus and method claims has been addressed by recasting claims 15-20 into strictly method claim form. Claim 15, as amended, is now in the following method claim form:

15. data encoding method for counting up from input number data $n = d_m d_{m-1} d_{m-2} ... d_1 d_0$ comprising:

adding a logic one to inverted input number data to provide intermediate number data;

multiplexing the inverted input number data and the intermediate number data to provide output number data; such that:

if n is even, then the output number data comprises $n + 1 = \overline{d}_m \overline{d}_{m-1} \overline{d}_{m-2} ... \overline{d}_1 \overline{d}_0$; and

if n is odd, then the output number data comprises $n + 1 = \overline{d}_m \overline{d}_{m-1} \overline{d}_{m-2} ... \overline{d}_1 \overline{d}_0 + 1$.

It can be seen that claims 15 and 18 are amended to include a first and second method elements. A first method element is directed to an adding a logic one to inverted input data, and a second method element is directed to multiplexing, which is further limited by the third and fourth method elements. Support for these new limitations is found in FIG. 4, in the accompanying specification text and in allowed claims 1-12. No new matter is added thereby. Moreover, since the step of "adding a logic one" previously appears in allowed claim 2, and a multiplexer element previously appears in allowed claim 1, no new search is required by the amendments.

The rejection of merely manipulating numbers is similarly addressed by the inclusion of the two new method elements which result in the "output of data" whose structure will depend on the encoding steps performed. It is clear from claims 15-20, as now amended, that a *bona fide* data encoding method is be claimed, and not merely the recitation of a naked algorithm. Data encoders and data encoding methods of all types are known in the art. Many data encoders and data encoding methods are patented.
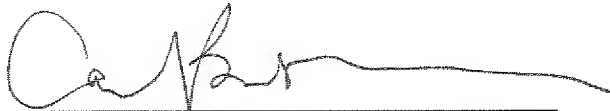
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The data encoding method claimed, as mentioned above, has particular utility in ferroelectric memories. The way that the data is encoded according to the present invention makes sure that the output data switches data state frequently in all bits, thus preventing undesirable imprinting of the same data state into a ferroelectric memory cell. This, in turn, leads to a longer operating life for a ferroelectric memory, which is a concrete, useful, and tangible result for those using ferroelectric memories.

Claims 15 and 18 are thus allowable under 35 USC § 101 for the reasons given above. Claims 16 and 17 are allowable as dependent upon allowable claim 15, and claims 19 and 20 are allowable as being dependent upon allowable claim 18. Withdrawal of the rejection of claims 15-20 is proper and respectfully requested.

C.   Conclusion.

In view of the above amendments, claims 13-20 are in form for allowance, and such action is respectfully requested. Should any issues remain, the Examiner is kindly asked to telephone the undersigned.

Respectfully submitted,

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